

Mr. Douglas M. Rohrs
Stoneco, Inc.
P.O. Box 29A
Maumee, OH 43537

Re: 151-11023-03222
First Significant Revision to
FESOP 151-5808-03222

Dear Mr. Rohrs:

Stoneco, Inc., was issued a permit on December 13, 1996 for a stationary batch mix asphalt plant. A letter requesting changes to this permit was received on June 1, 1999. Pursuant to the provisions of 326 IAC 2-8-11.1 a significant permit revision to this permit is hereby approved as described in the attached Technical Support Document and as described herein (bold emphasis added to new language):

1. The descriptive information about the plant in Item (a) of Section A.2 on Page 4 of the FESOP shall be revised to reflect the size of the replacement burner and new baghouse ID as follows:
 - (a) one (1) aggregate batch mix dryer (ID No. EU-05), with a maximum capacity of 250 tons per hour; equipped with one (1) natural gas fired dryer burner with a maximum heat input of ~~89~~ **125** million (MM) Btu per hour, using liquefied petroleum gas (LPG), No. 1 distillate fuel oil, No. 2 distillate fuel oil, No. 4 residual fuel oil, No. 5 residual fuel oil, No. 6 residual fuel oil and re-refined waste oil as back-up fuels; with one (1) baghouse (ID No. ~~B-1~~ **9**) for particulate matter control, exhausting to one (1) stack (ID No. ~~SV-1~~ **9**);
2. The description of the liquid storage tanks in Items (d) and (e) of Section A.2 on Page 4 of the FESOP shall be modified and Items (f) and (g) shall be added to reflect changes in liquid storage tanks at the plant as follows:
 - (d) ~~one (1) 30,000 gallon asphalt cement storage tank (ID No. T-01); and~~ **three (3) 15,000 gallon liquid asphalt storage tanks designated T-01, T-02 and T-03;**
 - (e) ~~one (1) 16,000 gallon fuel oil storage tank (ID No. T-02).~~ **one (1) 15,800 gallon fuel oil storage tank designated T-04;**
 - (f) **one (1) 10,108 gallon fuel oil storage tank designated T-05; and**
 - (g) **one (1) 10,000 gallon fuel oil storage tank designated T-06.**

3. The descriptive information about the dryer burner and baghouse in Item (a) of Section D.1 on Page 21 of the FESOP shall be revised as follows:

(a) one (1) aggregate batch mix dryer (ID No. EU-05), with a maximum capacity of 250 tons per hour; equipped with one (1) natural gas fired dryer burner with a maximum heat input of ~~89~~ **125** million (MM) Btu per hour, using liquefied petroleum gas (LPG), No. 1 distillate fuel oil, No. 2 distillate fuel oil, No. 4 residual fuel oil, No. 5 residual fuel oil, No. 6 residual fuel oil and re-refined waste oil as back-up fuels; with one (1) baghouse (ID No. ~~B-1~~ **9**) for particulate matter control, exhausting to one (1) stack (ID No. ~~SV-1~~ **9**); and

4. The first paragraph of Condition D.1.4 on Page 21 of the FESOP shall be revised to reflect the size of the replacement burner as follows:

D.1.4 Sulfur Dioxide (SO₂)

Pursuant to 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations), sulfur dioxide emissions from the ~~89~~ **125** million Btu per hour burner for the aggregate dryer shall be limited to 1.6 pounds per million Btu heat input for residual oils, and shall be limited to 0.5 pounds per MMBtu for distillate oil combustion. This is equivalent to the following maximum allowable sulfur contents of the following fuels: No. 1 distillate fuel oil (0.48% maximum sulfur content), No. 2 distillate fuel oil (0.49% maximum sulfur content), No. 4 residual oil (1.56% maximum sulfur content), No. 5 residual fuel oil (1.66% maximum sulfur content), No. 6 residual fuel oil (1.66% maximum sulfur content), and re-refined waste oil (1.47% maximum sulfur content).

Pursuant to 326 IAC 7-1.1-2, this sulfur dioxide limit applies at all times including periods of startup, shutdown, and malfunction.

5. The equivalence ratios of natural gas and liquefied petroleum gas based on SO₂ emissions contained in Condition D.1.5 on Page 22 of the FESOP have been removed because their effect on the limited PTE is negligible. Additionally, the period of compliance for the limit has been changed from a daily basis to a 12 consecutive month basis. The changes to Condition D.1.5 shall be as follows:

D.1.5 No. 2 Distillate Fuel Oil Usage and Equivalents

The consumption of No. 2 distillate fuel oil (not to exceed 0.49% sulfur content) plus equivalent No. 2 distillate fuel oil consumption from back-up fuels, shall be limited to 2,783,000 gallons per ~~365-day period, rolled on a daily basis~~ **twelve (12) consecutive month period**. For the purposes of calculating equivalent No. 2 distillate fuel oil consumption from back-up fuels, the following conversion factors shall be utilized:

- 1) ~~1 MMCF of natural gas = 8.480e-3 kgal of No. 2 distillate fuel oil,~~
2) ~~1 kgal of liquefied petroleum gas (not to exceed 0.01% sulfur) = 1.282e-5 kgal of No. 2 distillate fuel oil~~
(13) 1 kgal of No. 1 distillate fuel oil (not to exceed 0.48% sulfur) = 9.796e-1 kgal of No. 2 distillate fuel oil
(24) 1 kgal of No. 4 residual fuel oil (not to exceed 0.70% sulfur) = 1.509e+0 kgal of No. 2 distillate fuel oil
(35) 1 kgal of No. 5 residual fuel oil (not to exceed 0.87% sulfur) = 1.963e+0 kgal of No. 2 distillate fuel oil
(46) 1 kgal of No. 6 residual fuel oil (not to exceed 1.34% sulfur) = 3.024e+0 kgal of No. 2 distillate fuel oil

- (57) 1 kgal of waste oil (No. 4 recycled) (not to exceed 0.70% sulfur) = 1.479e+0 kgal of No. 2 fuel oil

Therefore, the requirements of 326 IAC 2-7 will not apply.

6. A new Condition, D.1.5a, has been added to the FESOP as a new Page 22a. This condition limits the combustion of natural gas fuel and natural gas equivalents in the aggregate dryer burner such that the total nitrogen oxides (NO_x) potential to emit (PTE) of the source is below the Part 70 significant level. The language of Condition D.1.5a is as follows:

D.1.5a Natural Gas Usage and Equivalents

The consumption of natural gas fuel plus equivalent natural gas fuel consumption from back-up fuels, shall be limited to 702.14 million cubic feet (MMCF) per twelve (12) consecutive month period. For the purposes of calculating equivalent natural gas consumption from back-up fuels, the following conversion factors shall be utilized:

- (1) 1 kgal of No. 2 distillate fuel oil = 0.2485 million cubic feet of natural gas,
- (2) 1 kgal of liquefied petroleum gas = 0.0679 million cubic feet of natural gas
- (3) 1 kgal of No. 1 distillate fuel oil = 0.0857 million cubic feet of natural gas
- (4) 1 kgal of No. 4 residual fuel oil = 0.1679 million cubic feet of natural gas
- (5) 1 kgal of No. 5 residual fuel oil = 0.1679 million cubic feet of natural gas
- (6) 1 kgal of No. 6 residual fuel oil = 0.1679 million cubic feet of natural gas
- (7) 1 kgal of waste oil (No. 4 recycled) = 0.0679 million cubic feet of natural gas

Therefore, the requirements of 326 IAC 2-7 will not apply.

7. Condition D.1.15, starting on Page 24 of the FESOP has been revised to specify the additional record keeping associated with the new natural gas and natural gas equivalent limitation and the change to the fuel oil usage limit from a daily to a monthly basis. The modified condition shall be as follows:

D.1.15 No. 2 Distillate Fuel Oil Usage and Equivalents

- (a) Complete and sufficient records shall be kept to establish compliance with **the natural gas and natural gas equivalents usage limit**, the No. 2 distillate fuel oil and equivalents usage limits, and sulfur dioxide emission limits established in this permit and **these records shall** contain a minimum of the following:

- (1) Calendar dates covered in the compliance determination period;
- (2) **Daily Monthly natural gas usage plus equivalent natural gas usage from back-up fuels and monthly** No. 2 distillate fuel oil usage plus equivalent No. 2 fuel oil usage from back-up fuels;
- (3) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period; and
- (4) Fuel supplier certifications.

- (b) The supplier certification shall contain, as a minimum, the following:
 - (1) The name of the supplier; and
 - (2) A statement from the oil supplier that certifies the sulfur content and heat content of the fuel oil.
- 8. Condition D.1.16 on Page 25 of the FESOP has been revised to require quarterly reporting requirements associated with the new natural gas and natural gas equivalent limitation. The revised condition shall be as follows:

D.1.16 Quarterly Reporting
A quarterly summary to document compliance with operation Conditions D.1.5 and **D.1.5a**, shall be submitted to the address(es) listed in Section C.16 - General Reporting Requirements, using the enclosed forms or their equivalent, within thirty (30) days after the end of the quarter being reported.
- 9. The description of the liquid storage tanks in the facilities description of Section D.3 on Page 27 of the FESOP shall be modified to be consistent with the changes in liquid storage tanks at the plant as follows:
 - (d) ~~one (1) 30,000 gallon asphalt cement storage tank (ID No. T-01); and~~ **three (3) 15,000 gallon liquid asphalt storage tanks designated T-01, T-02 and T-03;**
 - (e) ~~one (1) 16,000 gallon fuel oil storage tank (ID No. T-02);~~ **one (1) 15,800 gallon fuel oil storage tank designated T-04;**
 - (f) **one (1) 10,108 gallon fuel oil storage tank designated T-05; and**
 - (g) **one (1) 10,000 gallon fuel oil storage tank designated T-06.**
- 10. Condition D.3.1 on Page 27 of the FESOP has been modified to be consistent with the changes in liquid storage tanks at the plant as follows:

D.3.1 Volatile Organic Compounds (VOC)
Pursuant to 40 CFR 60.110b(b), the one (1) ~~16,000~~ **15,800** gallon fuel oil storage tank (ID No. ~~T-02 T-04~~) **and the three (3) 15,000 gallon liquid asphalt storage tanks (ID Nos. T-01, T-02 and T-03)** ~~is~~ **are** subject to 60.116b, which requires that records be maintained showing the dimensions and analysis of the capacity of the tanks ~~(for tanks with a capacities less than 19,813 gallons).~~ **Per 40 CFR 60.110b(c), the one (1) 30,000 gallon fuel oil storage tank (ID No. T-01) is subject to 60.116b, which requires that records be maintained showing the dimensions and analysis of capacity of the tank and indicating the true vapor pressure of the stored VOC to be less than 15.0 kPa (for tanks with a capacity greater than 19,813 gallons but less than 39,890 gallons, and which have a maximum true vapor pressure of less than 15.0 kPa).**

11. Condition D.3.2 on Page 27 of the FESOP has also been modified to be consistent with the changes in liquid storage tanks at the plant as follows:

D.3.2 Storage Vessel

The Permittee shall maintain records at the source showing:

- (a) the dimension of each **affected** storage vessel (tanks T-01, ~~and T-02, T-03 and T-04~~); **and**
 - (b) an analysis showing the capacity of each **affected** storage vessel (tanks T-01, ~~and T-02, T-03 and T-04~~); **and**
 - (c) ~~the true vapor pressure of each VOC stored, indicating that the maximum true vapor pressure of each VOC stored is less than 15.0 kPa (tank T-01).~~
12. The quarterly reporting form on Page 31 of the FESOP has been revised to reflect the new burner size, the changes to the No. 2 fuel oil equivalents, and the change of compliance determination period. In addition, a new quarterly reporting form has been added as Page 31a for reporting natural gas and natural gas equivalent usage.
13. An Affidavit of Construction for the new dryer burner has been included with the modified FESOP pages.
14. The following construction conditions are applicable to the proposed project:
1. General Construction Conditions
The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Management (OAM).
 2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.
 3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.
 4. Pursuant to 326 IAC 2-1.1-9 (Revocation), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.
 5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

Pursuant to 326 IAC 2-8-11.1, this permit shall be revised by incorporating the significant permit revision into the permit. All other conditions of the permit shall remain unchanged and in effect. Please

attach a copy of this modification and the following revised permit pages to the front of the original permit.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Janusz Johnson, OAM, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call at (800) 451-6027, press 0 and ask for extension (2-8325), or dial (317) 232-8325.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

Attachments

JKJ

cc: File - Steuben County
U.S. EPA, Region V
Steuben County Health Department
Northern Regional Office (NRO)
Air Compliance Section Inspector - Doyle Houser
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michele Boner

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP) OFFICE OF AIR MANAGEMENT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015
Phone: 1-800-451-6027

**Stoneco, Inc. Angola Asphalt Plant
County Road 300 North
Angola, Indiana 46703**

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the facilities listed in Section A (Source Summary) of this permit.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 and contains the conditions and provisions specified in 326 IAC 2-8 and 40 CFR Part 70.6 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments) and IC 13-15 and IC 13-17 (prior to July 1, 1996, IC 13-1-1-4 and IC 13-7-10).

Operation Permit No.: F151-5808-03222	
Issued by: Felicia R. George, Assistant Commissioner Office of Air Management	Issuance Date: December 13, 1996
First Significant Permit Revision: 151-11023-03222	Pages Affected: 2, 21, 22, 22a, 24, 25, 27, 31, and 31a
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

SECTION A SOURCE SUMMARY

A.1 General Information [326 IAC 2-8-3(c)]

The Permittee owns and operates a batch hot mix asphalt plant.

Responsible Official: Jerry Willman
Source Address: County Road 300 North, Angola, Indiana 46703
Mailing Address: P.O. Box 29A, Maumee, Ohio, 43537
SIC Code: 2951
County Location: Steuben
County Status: Attainment for all criteria pollutants
Source Status: Synthetic Minor Source, FESOP Program

A.2 Emission Units and Pollution Control Summary [326 IAC 2-8-3(c)]

The stationary source consists of the following emission units and pollution control devices:

- (a) one (1) aggregate batch mix dryer (ID No. EU-05), with a maximum capacity of 250 tons per hour; equipped with one (1) natural gas fired dryer burner with a maximum heat input of 125 million (MM) Btu per hour, using liquefied petroleum gas (LPG), No. 1 distillate fuel oil, No. 2 distillate fuel oil, No. 4 residual fuel oil, No. 5 residual fuel oil, No. 6 residual fuel oil and re-refined waste oil as back-up fuels; with one (1) baghouse (ID No. 9) for particulate matter control, exhausting to one (1) stack (ID No. 9);
- (b) feeding, conveying and loading operations, processing a maximum of 250 tons per hour;
- (c) cold-mix (stockpile mix) asphalt manufacturing operations;
- (d) three (3) 15,000 gallon liquid asphalt storage tanks designated T-01, T-02 and T-03;
- (e) one (1) 15,800 gallon fuel oil storage tank designated T-04;
- (f) one (1) 10,108 gallon fuel oil storage tank designated T-05; and
- (g) one (1) 10,000 gallon fuel oil storage tank designated T-06.

A.3 Insignificant Activities [326 IAC 2-8-3(c)(3)(I)]

This stationary source also includes the following insignificant activities, as defined in 326 IAC 2-7-1(20):

- (a) one (1) hot oil heater, with a maximum heat input of 1 MMBtu per hour, firing No. 2 distillate fuel oil with natural gas and LPG as back-up fuels, exhausting to one (1) stack;
- (b) sand, crushed stone and reclaimed asphalt pavement storage piles with a maximum total storage capacity of 60,000 tons; and
- (c) paved and unpaved roadways.

A.4 FESOP Applicability [326 IAC 2-8-2]

This stationary source, required to have a Part 70 permit as described in 326 IAC 2-7-2(a), has applied to Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) for a Federally Enforceable State Operating Permit (FESOP).

SECTION D.1

FACILITY OPERATION CONDITIONS

- (a) one (1) aggregate batch mix dryer (ID No. EU-05), with a maximum capacity of 250 tons per hour; equipped with one (1) natural gas fired dryer burner with a maximum heat input of 125 million (MM) Btu per hour, using liquefied petroleum gas (LPG), No. 1 distillate fuel oil, No. 2 distillate fuel oil, No. 4 residual fuel oil, No. 5 residual fuel oil, No. 6 residual fuel oil and re-refined waste oil as back-up fuels; with one (1) baghouse (ID No. 9) for particulate matter control, exhausting to one (1) stack (ID No. 9); and
- (b) feeding, conveying and loading operations, processing a maximum of 250 tons per hour;

Emissions Limitations and Standards [326 IAC 2-8-4(1)] [326 IAC 6-3] [326 IAC 12] [40 CFR Part 60.90]

D.1.1 Particulate Matter

State: Pursuant to 326 IAC 6-3 (Process Operations), the particulate matter emissions from the mixing and drying operations (ID No. EU-05) shall not exceed 55.3 pounds per hour.

Federal: Pursuant to 326 IAC 12, (40 CFR Part 60.90, Subpart I) "Standards of Performance for Hot Mix Asphalt Facilities", the particulate matter emissions from the mixing and drying operations shall be limited to 0.04 grains per dry standard cubic foot.

D.1.2 Particulate Matter with Aerodynamic Diameter Less Than or Equal to 10 Micrometers (PM₁₀)

Pursuant to 326 IAC 2-8-4, PM₁₀ emissions from the aggregate mixing and drying operation (ID No. EU-05) shall not exceed 22.1 pounds per hour, including both filterable and condensable fractions. Compliance with this limit will satisfy 326 IAC 2-8-4. Therefore, the Part 70 rules (326 IAC 2-7) do not apply.

D.1.3 Opacity

Pursuant to 326 IAC 12, (40 CFR Part 60.92, Subpart I) "Standards of Performance for Hot Mix Asphalt Facilities", the mixing and drying operations shall not discharge or cause the discharge into the atmosphere any gases which exhibit 20% opacity or greater.

D.1.4 Sulfur Dioxide (SO₂)

Pursuant to 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations), sulfur dioxide emissions from the 125 million Btu per hour burner for the aggregate dryer shall be limited to 1.6 pounds per million Btu heat input for residual oils, and shall be limited to 0.5 pounds per MMBtu for distillate oil combustion. This is equivalent to the following maximum allowable sulfur contents of the following fuels: No. 1 distillate fuel oil (0.48% maximum sulfur content), No. 2 distillate fuel oil (0.49% maximum sulfur content), No. 4 residual oil (1.56% maximum sulfur content), No. 5 residual fuel oil (1.66% maximum sulfur content), No. 6 residual fuel oil (1.66% maximum sulfur content), and re-refined waste oil (1.47% maximum sulfur content).

Pursuant to 326 IAC 7-1.1-2, this sulfur dioxide limit applies at all times including periods of startup, shutdown, and malfunction.

D.1.5 No. 2 Distillate Fuel Oil Usage and Equivalents

The consumption of No. 2 distillate fuel oil (not to exceed 0.49% sulfur content) plus equivalent No. 2 distillate fuel oil consumption from back-up fuels, shall be limited to 2,783,000 gallons per twelve (12) consecutive month period. For the purposes of calculating equivalent No. 2 distillate fuel oil consumption from back-up fuels, the following conversion factors shall be utilized:

- (1) 1 kgal of No. 1 distillate fuel oil (not to exceed 0.48% sulfur) = 9.796e-1 kgal of No. 2 distillate fuel oil
- (2) 1 kgal of No. 4 residual fuel oil (not to exceed 0.70% sulfur) = 1.509e+0 kgal of No. 2 distillate fuel oil
- (3) 1 kgal of No. 5 residual fuel oil (not to exceed 0.87% sulfur) = 1.963e+0 kgal of No. 2 distillate fuel oil
- (4) 1 kgal of No. 6 residual fuel oil (not to exceed 1.34% sulfur) = 3.024e+0 kgal of No. 2 distillate fuel oil
- (5) 1 kgal of waste oil (No. 4 recycled) (not to exceed 0.70% sulfur) = 1.479e+0 kgal of No. 2 fuel oil

Therefore, the requirements of 326 IAC 2-7 will not apply.

Testing Requirements [326 IAC 2-8-4(3)]

D.1.6 Particulate Matter

During the period between 24 months and 36 months after issuance of this permit, the Permittee shall perform PM and PM10 testing utilizing methods per 40 CFR Part 60 Appendix A, Method 5, 17, 40 CFR Part 51 Appendix M, Method 201, 201a, 202, as approved by the Commissioner. This test shall be repeated at least once every five years from the date of this valid compliance demonstration. PM10 includes filterable and condensable PM10.

D.1.7 Fuel Oil Sampling and Analysis

Oil samples shall be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted. The Permittee shall analyze the oil sample to determine the sulfur content of the oil in accordance with 326 IAC 3-3-4. If a partially empty fuel tank is refilled, a new sample and analysis is required upon filling. Vendor analysis of each load delivered is acceptable, in lieu of the above, if accompanied by a certification.

Compliance Monitoring Requirements [326 IAC 2-8-5(a)(1)]

D.1.8 Pressure Readings

The Permittee shall take readings of the total static pressure drop across the baghouse controlling the mixing and drying operation, at least once a day when the mixing and drying process is in operation. Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across the baghouse shall be maintained within the range of 2.0 and 6.0 inches of water. The Preventive Maintenance Plan for this unit shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of this range for any one reading.

D.1.5a Natural Gas Usage and Equivalents

The consumption of natural gas fuel plus equivalent natural gas fuel consumption from back-up fuels, shall be limited to 702.14 million cubic feet (MMCF) per twelve (12) consecutive month period. For the purposes of calculating equivalent natural gas consumption from back-up fuels, the following conversion factors shall be utilized:

- (1) 1 kgal of No. 2 distillate fuel oil = 0.2485 million cubic feet of natural gas,
- (2) 1 kgal of liquefied petroleum gas = 0.0679 million cubic feet of natural gas
- (3) 1 kgal of No. 1 distillate fuel oil = 0.0857 million cubic feet of natural gas
- (4) 1 kgal of No. 4 residual fuel oil = 0.1679 million cubic feet of natural gas
- (5) 1 kgal of No. 5 residual fuel oil = 0.1679 million cubic feet of natural gas
- (6) 1 kgal of No. 6 residual fuel oil = 0.1679 million cubic feet of natural gas
- (7) 1 kgal of waste oil (No. 4 recycled) = 0.0679 million cubic feet of natural gas

Therefore, the requirements of 326 IAC 2-7 will not apply.

Weekly (during operating season)

- (a) Check compressed air system for leaks.
- (b) Check duct work and baghouse housing for holes and air leaks.

Monthly (during operating season)

- (a) Check filter bags visually for leaks.
- (b) Check screw conveyor hanger bearings for wear and proper operations.
- (c) Check filter pulse system for proper operation.
- (d) Check exhaust fan drive belt tension.

Yearly (during the off season)

- (a) Check condition of bags to determine useful life remaining in bags.
- (b) Check baghouse structure and duct work for rust and worn places in steel.

Appropriate corrective actions shall be taken in accordance with Condition C.12.

D.1.12 Preventive Maintenance [326 IAC 2-8-4(9)]

A Preventive Maintenance Plan, in accordance with Condition B.13 of this permit, is required for this facility.

D.1.13 Waste Oil Firing

Pursuant to 329 IAC 3.1-11 (Standards for the management of specific hazardous wastes and specific types of hazardous waste management facilities), the waste oil burned in the aggregate dryer burner shall meet the used oil specifications in 40 CFR 266 (Standards for the management of specific hazardous wastes and specific types of hazardous waste management facilities), Subpart E (used oil burned for energy recovery), does not apply.

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]

D.1.14 Operational Parameters

The Permittee shall maintain a daily record for the baghouse controlling particulate matter emissions from asphalt mixing and drying operations of the following values:

- (a) Baghouse inlet temperature;
- (b) Inlet and outlet differential static pressure;
- (c) Visible observations;
- (d) Checklist with dates and initials for each preventive action performed; and
- (e) Records of corrective actions.

D.1.15 Fuel Usage and Equivalents

- (a) Complete and sufficient records shall be kept to establish compliance with the natural gas and natural gas equivalents usage limit, the No. 2 distillate fuel oil and equivalents usage limit, and sulfur dioxide emission limits established in this permit and these records shall contain a minimum of the following:
 - (1) Calendar dates covered in the compliance determination period;

- (2) Monthly natural gas usage plus equivalent natural gas usage from back-up fuels and monthly No. 2 distillate fuel oil usage plus equivalent No. 2 fuel oil usage from back-up fuels;
 - (3) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period; and
 - (4) Fuel supplier certifications.
- (b) The supplier certification shall contain, as a minimum, the following:
 - (1) The name of the supplier; and
 - (2) A statement from the oil supplier that certifies the sulfur content and heat content of the fuel oil.

D.1.16 Quarterly Reporting

A quarterly summary to document compliance with operation Conditions D.1.5 and D.1.5a, shall be submitted to the address(es) listed in Section C.16 - General Reporting Requirements, using the enclosed forms or their equivalent, within thirty (30) days after the end of the quarter being reported.

SECTION D.3 FACILITY OPERATION CONDITIONS

- (d) three (3) 15,000 gallon liquid asphalt storage tanks designated T-01, T-02 and T-03;
- (e) one (1) 15,800 gallon fuel oil storage tank designated T-04;
- (f) one (1) 10,108 gallon fuel oil storage tank designated T-05; and
- (g) one (1) 10,000 gallon fuel oil storage tank designated T-06.

Emissions Limitations and Standards [326 IAC 2-8-4(1)] [40 CFR Part 60.11b]

D.3.1 Volatile Organic Compounds (VOC)

Pursuant to 40 CFR 60.110b(b), the one (1) 15,800 gallon fuel oil storage tank (ID No. T-04) and the three (3) 15,000 gallon liquid asphalt storage tanks (ID Nos. T-01, T-02 and T-03) are subject to 60.116b, which requires that records be maintained showing the dimensions and analysis of the capacity of the tanks.

Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]

D.3.2 Storage Vessel

The Permittee shall maintain records at the source showing:

- (a) the dimension of each affected storage vessel (tanks T-01, T-02, T-03 and T-04); and
- (b) an analysis showing the capacity of each affected storage vessel (tanks T-01, T-02, T-03 and T-04).

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT, COMPLIANCE DATA SECTION
FESOP Quarterly Report**

Source Name: Stoneco, Inc. Angola Asphalt Plant
Source Address: County Road 300 North, Angola, Indiana 46703
FESOP No.: F151-5808-03222
Facility: 125 million British thermal units per hour burner for the aggregate batch mix dryer
Parameter: SO₂ fuel consumption limitations
Limits:

The consumption of No. 2 distillate fuel oil (not to exceed 0.49% sulfur content) plus equivalent No. 2 distillate fuel oil consumption from back-up fuels, shall be limited to 2,783,000 U.S. gallons per twelve (12) consecutive month period. For the purposes of calculating equivalent No. 2 distillate fuel oil consumption from back-up fuels, the following conversion factors shall be utilized:

- (1) 1 kgal of No. 1 distillate fuel oil (not to exceed 0.48% sulfur) = 9.796e-1 kgal of No. 2 distillate fuel oil;
- (2) 1 kgal of No. 4 residual fuel oil (not to exceed 0.70% sulfur) = 1.509e+0 kgal of No. 2 distillate fuel oil;
- (3) 1 kgal of No. 5 residual fuel oil (not to exceed 0.87% sulfur) = 1.963e+0 kgal of No. 2 distillate fuel oil;
- (4) 1 kgal of No. 6 residual fuel oil (not to exceed 1.34% sulfur) = 3.024e+0 kgal of No. 2 dist. fuel oil; and
- (5) 1 kgal of re-refined waste oil (not to exceed 0.70% sulfur) = 1.479e+0 kgal of No. 2 dist. fuel oil.

Year: _____

Month	No. 2 (+ equivalents) usage this month (gallons per month)	No. 2 (+ equivalents) usage for last twelve months (gallons per twelve months)

- 9 No deviation occurred in this month.
9 _____ Deviation(s) occurred in this month.
Deviation(s) reported on: _____

Submitted by: _____
Title/Position: _____
Signature: _____
Date: _____

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT, COMPLIANCE DATA SECTION
FESOP Quarterly Report**

Source Name: Stoneco, Inc. Angola Asphalt Plant
Source Address: County Road 300 North, Angola, Indiana 46703
FESOP No.: F151-5808-03222
Facility: 125 million British thermal units per hour burner for the aggregate batch mix dryer
Parameter: NO_x fuel consumption limitations
Limits:

The consumption of natural gas plus equivalent natural gas consumption from back-up fuels, shall be limited to 702.14 million cubic feet per twelve (12) consecutive month period. For the purposes of calculating equivalent natural gas consumption from back-up fuels, the following conversion factors shall be utilized:

- (1) 1 kgal of No. 2 distillate fuel oil = 0.2485 million cubic feet of natural gas,
- (2) 1 kgal of liquefied petroleum gas = 0.0679 million cubic feet of natural gas
- (3) 1 kgal of No. 1 distillate fuel oil = 0.0857 million cubic feet of natural gas
- (4) 1 kgal of No. 4 residual fuel oil = 0.1679 million cubic feet of natural gas
- (5) 1 kgal of No. 5 residual fuel oil = 0.1679 million cubic feet of natural gas
- (6) 1 kgal of No. 6 residual fuel oil = 0.1679 million cubic feet of natural gas
- (7) 1 kgal of waste oil (No. 4 recycled) = 0.0679 million cubic feet of natural gas

Year: _____

Month	natural gas (+ equivalents) usage this month (MMCF per month)	natural gas (+ equivalents) usage for last twelve months (MMCF per twelve months)

- 9 No deviation occurred in this month.
9 _____ Deviation(s) occurred in this month.
Deviation(s) reported on: _____

Submitted by: _____
Title/Position: _____
Signature: _____
Date: _____

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for a Significant Permit Revision to a Federally Enforceable State Operating Permit

Source Background and Description

Source Name:	Stoneco, Inc. Angola Asphalt Plant
Source Location:	County Road 300 North, Angola, Indiana 46703
County:	Steuben
SIC Code:	2951
Operation Permit No.:	F 151-5808-03222
Operation Permit Issuance Date:	December 13, 1996
Permit Revision No.:	151-11023-03222
Permit Reviewer:	Janusz Johnson

The Office of Air Management (OAM) has reviewed a revision application from Stoneco, Inc., relating to the construction and operation of the following emission units and pollution control devices:

- (a) one (1) natural gas fired dryer burner with a maximum heat input of 125 million (MM) Btu per hour, using liquefied petroleum gas (LPG), No. 1 distillate fuel oil, No. 2 distillate fuel oil, No. 4 residual fuel oil, No. 5 residual fuel oil, No. 6 residual fuel oil and re-refined waste oil as back-up fuels
- (b) one (1) baghouse (ID No. 9) for particulate matter control, exhausting to one (1) stack (ID No. 9);
- (c) three (3) 15,000 gallon liquid asphalt storage tanks designated T-01, T-02 and T-03;
- (d) one (1) 15,800 gallon fuel oil storage tank designated T-04;
- (e) one (1) 10,108 gallon fuel oil storage tank designated T-05; and
- (f) one (1) 10,000 gallon fuel oil storage tank designated T-06.

History

A FESOP for a stationary batch mix asphalt plant was issued to Stoneco, Inc., on December 13, 1996. On June 1, 1999, Stoneco, Inc., submitted a request to construct and operate a 125 million British thermal unit per hour replacement dryer burner and new baghouse. Stoneco, Inc., has agreed to accept limits on the total regulated air pollutant emissions from the modified source such that the requirements of 326 IAC 2-7 (Part 70 Permit Program) will not apply and that the requirements of Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21 are satisfied.

Existing Approvals

The source was issued a Federally Enforceable State Operating Permit (FESOP) (F151-5808-03222) on December 13, 1996. This will be the first revision of that permit since issuance.

Enforcement Issue

IDEM is aware that the replacement 125 MMBtu/hr dryer burner has been constructed and operated prior to receipt of the proper permit. IDEM is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction permit rules.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (inches)	Flow Rate (acfm)	Temperature (°F)
9	Asphalt Plant baghouse	20	41 x 27	70,000	325

Recommendation

The staff recommends to the Commissioner that the Significant Permit Revision be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on June 1, 1999.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (6 pages).

Potential To Emit of Modification

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	127.0
PM-10	101.2
SO ₂	739.1
VOC	4.0
CO	46.0
NO _x	176.2

Note: For the purpose of determining Title V applicability for particulates, PM-10, not PM, is the regulated pollutant in consideration.

Justification for Revision

The Federally Enforceable State Operating Permit (FESOP) is being modified through Significant Permit Revision. This revision is being performed pursuant to 326 IAC 2-8-11.1(f)(1) because the

potential to emit (PTE) particulate matter ten microns (PM-10), sulfur dioxide (SO₂) and nitrogen oxides (NO_x) are each equal to, or greater than, twenty five (25) tons per year.

County Attainment Status

The source is located in Steuben County.

Pollutant	Status
PM-10	attainment
SO ₂	attainment
NO ₂	attainment
Ozone	attainment
CO	attainment
Lead	attainment

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Steuben County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Steuben County has been classified as attainment or unclassifiable for all other regulated air pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	29.5
PM-10	5.6
SO ₂	99.0
VOC	99.0
CO	13.8
NO _x	64.6

- (a) This existing source is not a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not one of the 28 listed source categories.
- (b) These emissions are based upon the FESOP (F151-5808-03222) issued on December 13, 1996.

Potential to Emit of Modification After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Significant Permit Revision.

Process/facility	Potential to Emit (tons/year)						
	PM *	PM-10 *	SO ₂	VOC	CO	NO _x	HAPs
dryer and burner *	70.1	96.8	96.8	15.3	13.6	98.3	12.8
hot oil heater	0.1	0.0	2.2	0.0	0.2	0.7	0.0
conveying	0.4	0.2	0.0	0.0	0.0	0.0	0.0
unpaved roads	6.0	2.1	0.0	0.0	0.0	0.0	0.0
storage	0.2	0.1	0.0	0.0	0.0	0.0	0.0
cold mix storage	0.0	0.0	0.0	83.7	0.0	0.0	0.0
Total Emissions	76.8	99.2	99.0	99.0	13.8	99.0	12.8

* Note: Limited PM/PM10 PTE levels have been revised to reflect the permit limited PTE's rather than the controlled potential emissions. Based on differences in the testing methods which demonstrate compliance for PM and PM-10 limitations, the PM-10 limitation pursuant to 326 IAC 2-8-4 is greater than the PM limitation pursuant to 326 IAC 12, 40 CFR 60.90, (based on 70,000 acfm) because it includes the condensable portions in addition to filterable PM-10.

- (a) This modification to an existing minor stationary source is not major because the emission increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.
- (b) The source has accepted federally enforceable limits for particulate matter 10 microns (PM-10), nitrogen oxides (NO_x), sulfur dioxide (SO₂) and volatile organic compounds (VOC) of 99 tons per year per pollutant. Based on the request to modify the FESOP, the limitation on combustion of fuel oils (Condition D.1.4 of the FESOP) has been revised to account for a change in emission factors for the new, larger, dryer burner. Additionally, a new limitation on the combustion of natural gas (Condition D.1.4a of the FESOP) has been added to account for a change in emission factors for the new, larger, dryer burner.

Federal Rule Applicability

There are no changes to the applicability of Federal Rules due to the proposed significant modification to the FESOP.

State Rule Applicability

There are no changes to the applicability of State Rules due to the proposed significant modification to the FESOP.

Compliance Requirements

There are no changes to the compliance monitoring or record keeping and reporting requirements for the source as a result of the proposed significant modification to the FESOP.

Limiting Conditions

The federally enforceable limitation on combustion of fuel oil (Condition D.1.4) has been modified to account for differences in emission factors between the old burner and the new one, and the fuel equivalence ratios based on sulfur dioxide emissions have been revised accordingly.

A new federally enforceable limitation on combustion of natural gas (Condition D.1.4a) has been added to the FESOP to account for the differences in emission factors between the old burner and the new one, and new fuel equivalence ratios based on nitrogen oxides emissions have been added.

Conclusion

The operation of this new aggregate dryer burner, baghouse and liquid storage tanks at the existing batch mix asphalt plant shall be subject to the conditions of the attached proposed **Significant Permit Revision No. 151-11023-03222.**

Company Name:	Stoneco, Inc. Angola Asphalt Plant
Plant Location:	County Road 300 North, Angola, IN 46703
County:	Steuben
Date:	July 13, 1999
Permit Reviewer:	Janusz Johnson

PTE for the new aggregate dryer burner

The following calculations determine the amount of emissions created by natural gas combustion, from the aggregate dryer burner, based on 8,760 hours of operation and US EPA's AP-42, 5th Edition, Section 1.4 - Natural Gas Combustion, Tables 1.4-1, 1.4-2, and 1.4-3.

Criteria Pollutant:	$\frac{125 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{1000 \text{ Btu/cf} \times 2,000 \text{ lb/ton}}$	* Ef (lb/MMcf) = (ton/yr)
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P M:	1.9 lb/MMcf =	1.04 ton/yr
P M-10:	7.6 lb/MMcf =	4.16 ton/yr
S O 2:	0.6 lb/MMcf =	0.33 ton/yr
N O x:	280.0 lb/MMcf =	153.30 ton/yr
V O C:	5.5 lb/MMcf =	3.01 ton/yr
C O:	84.0 lb/MMcf =	45.99 ton/yr

The following calculations determine the amount of emissions created by the combustion of liquified petroleum gas @ 0.01 % sulfur, from the aggregate dryer, based on 8,760 hours of use and US EPA's AP-42, 5th Edition, Section 1.5 - Liquified Petroleum Gas Combustion, Table 1.5-2.

Criteria Pollutant:	$\frac{125 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{91,500 \text{ Btu/gal} \times 2,000 \text{ lb/ton}}$	* Ef (lb/1,000 gal) = (ton/yr)
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P M:	0.6 lb/1000 gal =	3.59 ton/yr
P M-10:	0.6 lb/1000 gal =	3.59 ton/yr
S O 2:	1.0E-03 lb/1000 gal =	6.0E-03 ton/yr
N O x:	19.0 lb/1000 gal =	113.69 ton/yr
V O C:	0.30 lb/1000 gal =	1.80 ton/yr
C O:	3.2 lb/1000 gal =	19.15 ton/yr

The following calculations determine the amount of emissions created by the combustion of #1 distillate fuel oil @ 0.48 % sulfur, from the aggregate dryer burner, based on 8,760 hours of use and US EPA's AP-42, 5th Edition, Section 1.3 - Fuel Oil Combustion, Tables 1.3-2, 1.3-4, and 1.3-7.

Criteria Pollutant:	$\frac{125 \text{ MMBtu/hr} \times 8,760 \text{ hr/yr}}{137,500 \text{ Btu/gal} \times 2,000 \text{ lb/ton}}$	* Ef (lb/1,000 gal) = (ton/yr)
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P M:	2.0 lb/1000 gal =	7.96 ton/yr
P M-10:	1.0 lb/1000 gal =	3.98 ton/yr
S O 2:	68.2 lb/1000 gal =	271.40 ton/yr
N O x:	24.0 lb/1000 gal =	95.56 ton/yr
V O C:	0.20 lb/1000 gal =	0.80 ton/yr
C O:	5.0 lb/1000 gal =	19.91 ton/yr

The following calculations determine the amount of emissions created by the combustion of #2 distillate fuel oil
@ 0.49 % sulfur, from the aggregate dryer burner, based on 8,760 hours of use and
US EPA's AP-42, 5th Edition, Section 1.3 - Fuel Oil Combustion, Tables 1.3-2, 1.3-4, and 1.3-7.

Criteria Pollutant:	125 MMBtu/hr * 8,760 hr/yr 140,000 Btu/gal * 2,000 lb/ton	* Ef (lb/1,000 gal) = (ton/yr)
P M:	2.0 lb/1000 gal =	7.82 ton/yr
P M-10:	1.0 lb/1000 gal =	3.91 ton/yr
S O 2:	69.6 lb/1000 gal =	272.11 ton/yr
N O x:	24.0 lb/1000 gal =	93.86 ton/yr
V O C:	0.20 lb/1000 gal =	0.78 ton/yr
C O:	5.0 lb/1000 gal =	19.55 ton/yr

The following calculations determine the amount of emissions created by the combustion of #4 residual fuel oil
@ 0.70 % sulfur, from the aggregate dryer burner, based on 8,760 hours of use and
US EPA's AP-42, 5th Edition, Section 1.3 - Fuel Oil Combustion, Tables 1.3-2, 1.3-4, and 1.3-6.

Criteria Pollutant:	125 MMBtu/hr * 8,760 hr/yr 146,000 Btu/gal * 2,000 lb/ton	* Ef (lb/1,000 gal) = (ton/yr)
P M:	7.0 lb/1000 gal =	26.25 ton/yr
P M-10:	6.02 lb/1000 gal =	22.58 ton/yr
S O 2:	105.0 lb/1000 gal =	393.75 ton/yr
N O x:	47.0 lb/1000 gal =	176.25 ton/yr
V O C:	0.20 lb/1000 gal =	0.75 ton/yr
C O:	5.0 lb/1000 gal =	18.75 ton/yr

The following calculations determine the amount of emissions created by the combustion of #5 residual fuel oil
@ 0.870 % sulfur, from the aggregate dryer burner, based on 8,760 hours of use and
US EPA's AP-42, 5th Edition, Section 1.3 - Fuel Oil Combustion, Tables 1.3-2, 1.3-4, and 1.3-6.

Criteria Pollutant:	125 MMBtu/hr * 8,760 hr/yr 155,837 Btu/gal * 2,000 lb/ton	* Ef (lb/1,000 gal) = (ton/yr)
P M:	10.0 lb/1000 gal =	35.13 ton/yr
P M-10:	8.6 lb/1000 gal =	30.21 ton/yr
S O 2:	136.6 lb/1000 gal =	479.88 ton/yr
N O x:	47.0 lb/1000 gal =	165.12 ton/yr
V O C:	0.28 lb/1000 gal =	0.98 ton/yr
C O:	5.0 lb/1000 gal =	17.57 ton/yr

The following calculations determine the amount of emissions created by the combustion of #6 residual fuel oil
@ 1.340 % sulfur, from the aggregate dryer burner, based on 8,760 hours of use and
US EPA's AP-42, 5th Edition, Section 1.3 - Fuel Oil Combustion, Tables 1.3-2, 1.3-4, and 1.3-6.

Criteria Pollutant:	125 MMBtu/hr * 8,760 hr/yr	* Ef (lb/1,000 gal) = (ton/yr)
	155,837 Btu/gal * 2,000 lb/ton	

P M:	15.5 lb/1000 gal =	54.58 ton/yr
P M-10:	13.4 lb/1000 gal =	46.94 ton/yr
S O 2:	210.4 lb/1000 gal =	739.13 ton/yr
N O x:	47.0 lb/1000 gal =	165.12 ton/yr
V O C:	0.28 lb/1000 gal =	0.98 ton/yr
C O:	5.0 lb/1000 gal =	17.57 ton/yr

The following calculations determine the amount of emissions created by the combustion of waste oil (#4 recycled)
@ 0.7 % sulfur, 0.5 % ash, based on 8760 hours of use and
US EPA's AP-42, 5th Edition, Section 1.11 - Waste Oil Combustion, Tables 1.11-1, 1.11-2, and 1.11-3.

Criteria Pollutant:	125 MMBtu/hr * 8760 hr/yr	* Ef (lb/1000 gal) = (ton/yr)
	138,000 Btu/gal * 2000 lb/ton	

P M:	32 lb/1000 gal =	126.96 ton/yr
P M-10:	25.5 lb/1000 gal =	101.17 ton/yr
S O 2:	102.9 lb/1000 gal =	408.24 ton/yr
N O x:	19.0 lb/1000 gal =	75.38 ton/yr
V O C:	1.0 lb/1000 gal =	3.97 ton/yr
C O:	5.0 lb/1000 gal =	19.84 ton/yr

Fuel Usage Limitations

Primary Fuel: Natural Gas

98.3 tons NOx/year limited	*	1095.00	MMCF	=	702.143	MMCF
153.30 tons NOx/year potential			year potential			year limited

No fuel equivalence limit for natural gas based on SO2 emissions from #2 distillate fuel oil is necessary.

Secondary Fuel: #2 distillate oil

96.8 tons SO2/year limited	*	7821.43	Kgals	=	2782.409	Kgals
272.11 tons SO2/year potential			year potential			year limited

Fuel equivalence limit for natural gas based on NOx emissions from #2 distillate fuel oil:

153.30 n.g. potential emis. (ton/yr)	/	272.11 #2 F.O. potential emissions (ton/yr)
1095.00 n.g. potential usage (MMCF/yr)		7821.43 #2 F.O. potential usage (kgal/yr)
=	4.024E+00	Kgal No. 2 fuel oil
		MMCF n.g.

Backup Fuel: LPG

No fuel equivalence limit for liquified petroleum gas based on SO₂ emissions from #2 distillate fuel oil is needed.

Fuel equivalence limit for liquified petroleum gas based on NO_x emissions from natural gas:

$$\frac{113.69 \text{ LPG potential emis. (ton/yr)}}{11967.21 \text{ LPG potential usage (kgal/yr)}} \div \frac{153.30 \text{ n.g. potential emis. (ton/yr)}}{1095.00 \text{ n.g. potential usage (MMCF/yr)}} = \frac{6.786\text{E-}02 \text{ MMCF n.g.}}{\text{Kgal LPG burned}}$$

Backup Fuel: #1 fuel oil

Fuel equivalence limit for #1 distillate fuel oil based on SO₂ emissions from #2 distillate fuel oil:

$$\frac{271.40 \text{ #1 F.O. potential emis. (ton/yr)}}{7963.64 \text{ #1 F.O. potential usage (kgal/yr)}} \div \frac{272.11 \text{ #2 F.O. potential emissions (ton/yr)}}{7821.43 \text{ #2 F.O. potential usage (kgal/yr)}} = \frac{9.796\text{E-}01 \text{ Kgal No. 2 fuel oil}}{\text{Kgal #1 F.O. burned}}$$

Fuel equivalence limit for #1 distillate fuel oil based on NO_x emissions from natural gas:

$$\frac{95.56 \text{ #1 F.O. potential emis. (ton/yr)}}{7963.64 \text{ #1 F.O. potential usage (kgal/yr)}} \div \frac{153.30 \text{ n.g. potential emis. (ton/yr)}}{1095.00 \text{ n.g. potential usage (MMCF/yr)}} = \frac{8.571\text{E-}02 \text{ MMCF n.g.}}{\text{Kgal #1 F.O. burned}}$$

Backup Fuel: #4 fuel oil

Fuel equivalence limit for #4 residual fuel oil based on SO₂ emissions from #2 distillate fuel oil:

$$\frac{393.75 \text{ #4 F.O. potential emis. (ton/yr)}}{7500.00 \text{ #4 F.O. potential usage (kgal/yr)}} \div \frac{272.11 \text{ #2 F.O. potential emissions (ton/yr)}}{7821.43 \text{ #2 F.O. potential usage (kgal/yr)}} = \frac{1.509\text{E+}00 \text{ Kgal No. 2 fuel oil}}{\text{Kgal #4 F.O. burned}}$$

Fuel equivalence limit for #4 residual fuel oil based on NO_x emissions from natural gas:

$$\frac{176.25 \text{ #4 F.O. potential emis. (ton/yr)}}{7500.00 \text{ #4 F.O. potential usage (kgal/yr)}} \div \frac{153.30 \text{ n.g. potential emis. (ton/yr)}}{1095.00 \text{ n.g. potential usage (MMCF/yr)}} = \frac{1.679\text{E-}01 \text{ MMCF n.g.}}{\text{Kgal #4 F.O. burned}}$$

Backup Fuel: #5 fuel oil

Fuel equivalence limit for #5 residual fuel oil based on SO₂ emissions from #2 distillate fuel oil:

$$\frac{479.88 \text{ \#5 F.O. potential emis. (ton/yr)}}{7026.57 \text{ \#5 F.O. potential usage (kgal/yr)}} \div \frac{272.11 \text{ \#2 F.O. potential emissions (ton/yr)}}{7821.43 \text{ \#2 F.O. potential usage (kgal/yr)}} = 1.963\text{E}+00 \frac{\text{Kgal No. 2 fuel oil}}{\text{Kgal \#5 F.O. burned}}$$

Fuel equivalence limit for #5 residual fuel oil based on NO_x emissions from natural gas:

$$\frac{165.12 \text{ \#5 F.O. potential emis. (ton/yr)}}{7026.57 \text{ \#5 F.O. potential usage (kgal/yr)}} \div \frac{153.30 \text{ n.g. potential emis. (ton/yr)}}{1095.00 \text{ n.g. potential usage (MMCF/yr)}} = 1.679\text{E}-01 \frac{\text{MMCF n.g.}}{\text{Kgal \#5 F.O. burned}}$$

Backup Fuel: #6 fuel oil

Fuel equivalence limit for #6 residual fuel oil based on SO₂ emissions from #2 distillate fuel oil:

$$\frac{739.13 \text{ \#6 F.O. potential emis. (ton/yr)}}{7026.57 \text{ \#6 F.O. potential usage (kgal/yr)}} \div \frac{272.11 \text{ \#2 F.O. potential emissions (ton/yr)}}{7821.43 \text{ \#2 F.O. potential usage (kgal/yr)}} = 3.024\text{E}+00 \frac{\text{Kgal No. 2 fuel oil}}{\text{Kgal \#6 F.O. burned}}$$

Fuel equivalence limit for #6 residual fuel oil based on NO_x emissions from natural gas:

$$\frac{165.12 \text{ \#6 F.O. potential emis. (ton/yr)}}{7026.57 \text{ \#6 F.O. potential usage (kgal/yr)}} \div \frac{153.30 \text{ n.g. potential emis. (ton/yr)}}{1095.00 \text{ n.g. potential usage (MMCF/yr)}} = 1.679\text{E}-01 \frac{\text{MMCF n.g.}}{\text{Kgal \#6 F.O. burned}}$$

Backup Fuel: waste oil

Fuel equivalence limit for waste oil based on SO₂ emissions from #2 distillate fuel oil:

$$\frac{408.24 \text{ waste oil potential emis. (ton/yr)}}{7934.78 \text{ waste oil potential usage (kgal/yr)}} \div \frac{272.11 \text{ \#2 F.O. potential emissions (ton/yr)}}{7821.43 \text{ \#2 F.O. potential usage (kgal/yr)}} = 1.479\text{E}+00 \frac{\text{Kgal No. 2 fuel oil}}{\text{Kgal waste oil burned}}$$

Fuel equivalence limit for waste oil based on NO_x emissions from natural gas:

$$\frac{75.38 \text{ waste oil potential emis. (ton/yr)}}{7934.78 \text{ waste oil potential usage (kgal/yr)}} \div \frac{153.30 \text{ n.g. potential emis. (ton/yr)}}{1095.00 \text{ n.g. potential usage (MMCF/yr)}} = 6.786\text{E}-02 \frac{\text{MMCF n.g.}}{\text{Kgal waste oil burned}}$$

40 CFR Part 60.90, Subpart I (Standards of Performance for Hot Mix Asphalt Plants) Compliance Calculations:

The following calculations determine compliance with NSPS, which limits stack emissions from asphalt plants to 0.04 gr/dscf:

0.04 gr/dscf *

7000 gr/lb *

47,083 dscf/min *

2000 lb/ton

525,600 min/yr

=

70.705 ton/yr

Allowable particulate emissions under NSPS equate to 70.70 tons per year.

Note:

SCFM =

70,000 acfm * (460 + 68) / (460 + 325)

=

47,083 scfm